Schroff®

MAIN CATALOG

EQUIPMENT PROTECTION SOLUTIONS | 24TH EDITION | OCTOBER 2012

01 Cabinets – VARISTAR LHX 20/40

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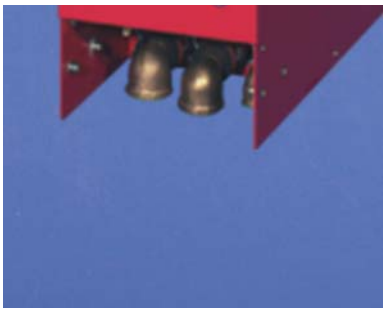
Cabinets – VARISTAR LHX 20/40

01007020

01009003

Electronic monitoring unit with display and interfaces



01009003

Water connection to front, easy access and greatest possible safety

01009003

Six powerful, temperature controlled fans; easy access for maintenance purposes during operation

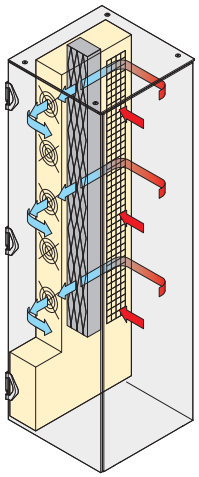
Applications

The heat exchanger LHX 20/40 is especially suitable for the use in the following sectors:

- Data centres
- 19" and blade server applications
- Systems with extremely high dissipation losses

A future for data centres

VARISTAR LHX, the space-independent complete cabinet system for removing dissipated heat up to 40 kW.
The air/water heat exchanger is inserted laterally into the cabinet as complete unit, to the left or right. The horizontal airflow ensures a uniform air distribution over the entire cabinet height.



01005081

Downloads and additional important information can be found on the Internet under www.schroff.biz

Overview 1.224

VARISTAR LHX 20/40 with air/water heat exchanger for data centres

- **Cooling capacity up to 40 kW**
- **Cabinet complete solution, static load-carrying capacity up to 1000 kg, protection class IP 55**
- **Space-independent heat dissipation, high energy efficiency**
- **Water and air loops are temperature controlled**
- **Low noise level**
- **Fans may be exchanged individually during operation**

With single door

01005019

- Cooling capacity up to 20/40 kW (heat exchanger to left or right)
- Hand operated door opening

With double door

01006039

- Cooling capacity up to 20 kW (heat exchanger to left or right)
- Hand operated or automatic door opening

12108001

00711020

Accessories

- AC Change-over switch
- Management system for monitoring LHX 20/40 and other cabinet parameters

30407004

ServicePLUS

e.g. other cabinet dimensions
e.g. side-by-side mounting solutions
e.g. containment (cold aisle)
e.g. custom solutions (special sizes)

www.schroff.biz/ServicePLUS

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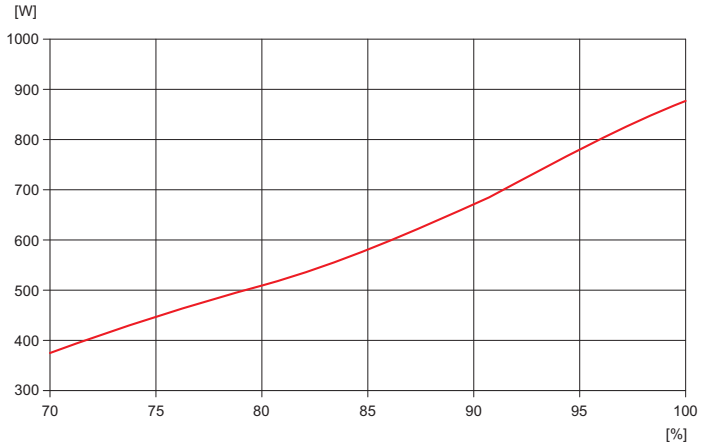
Cabinets – VARISTAR LHX 20/40

Space-saving, low-noise and energy-efficient

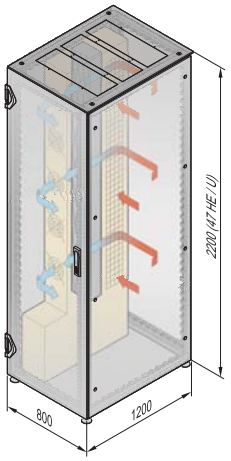
Highly efficient and noise-optimised



00108091

The VARISTAR heat exchanger range wins with its high energy efficiency and cooling capacity. The LHX 20, operating at 80 % fan speed, is very efficient with a total power consumption of only some 530 W. In the water circuit also, the device proves very efficient thanks to its low pressure losses. Control is thus primarily through the water circuit; only in emergencies or at full load do the fans run at 100 % speed.
The low fan speed also contributes to the reduced noise level. Moreover the VARISTAR LHX 20 operates behind the tightly closed glass door and with 80 % fan speed creates a noise level of only 50.7 dB(A).

Persuasive in its use of space



01008068

Thanks to its 1200 mm depth not only can you install all current server types in the VARISTAR LHX but there is also sufficient room for the cabling. Since the heat exchanger is inserted laterally as a complete module into the 800 mm wide cabinet only, the 19" plane can be used to its full height of 42 U (max. even 47 U). This saves valuable space in the data centre!

Can be mounted side-by-side and redundant

One heat exchanger for several cabinets

00106043

Since the cooler unit can be mounted either left or right of the 19" plane, highly variable or redundant cooling systems can be built from multiple cabinets without problems. If the full cooling capacity is not required at first, one device can supply several cabinets mounted side-by-side with cold air. Here the unused spaces for cooling units in the row of cabinets are closed off with an air divider. Should the requirement for cooling capacity rise, the divider is removed and an additional cooling unit inserted.

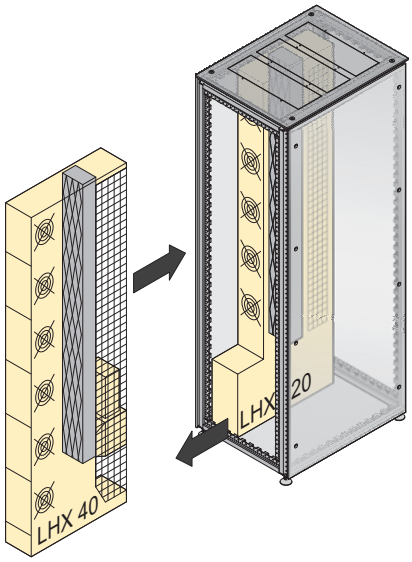
Redundancy through side-by-side positioning

01006044

Redundant systems can also be realised very simply. If two cabinets are placed together with a heat exchanger each, one device can perform the cooling of both cabinets up to a maximum of half the maximum cooling per cabinet.

Cabinets – VARISTAR LHX 20/40

Scaleable, upgradeable to 40 kW



01008089

The VARISTAR LHX heat exchanger range lets you move into water cooling step by step. Individually cooled cabinets that first neutralise hot-spots in the computer room can be gradually expanded to redundant systems and positioned side by side. Upgrades are also possible at any time in the selection of the heat exchanger: By initially installing only a maximum dissipation loss of 20 kW per cabinet and using the LHX 20 for cooling, it is possible to exchange this device later for an LHX 40 and thus obtain a cooling capacity of 40 kW.

Service-friendly, secure and monitored

Failure safety and ease of servicing play a special role with the VARISTAR LHX. The unit itself is designed for long life. Sensitive components with short MTBF are consistently avoided and all necessary expendable parts are used so as to maximise their life. Thus in normal operation fans run at only 80 % of full speed and are positioned in the cold section of the cabinet, which considerably increases the lifetime of the bearings over that of their use in the warm section. Additionally, the heat exchanger is equipped as standard with a droplet separator and a condensate management system to prevent the formation of water droplets in the air entry area to the server.
The VARISTAR LHX 20 and LHX 40 series of devices are designed for ease of installation and maintenance.

The water connections are easily accessible in the bottom front cabinet area (in the LHX 40 optionally from the front or rear). Fans can be changed individually and very quickly while the unit is operating.
However, should a fault develop either in the cabinet or in the unit itself, each heat exchanger provides valuable information for maintenance and service works. Fan speeds and temperatures at various positions in the cooling circuit are measured via integrated communications interfaces and can be shown on a display. All information (measured values, thresholds etc) can also be monitored via an EMC box and passed directly to the network management system.

01005010

Water connection and condensate management
Temperature display and RS 232 interface for an Ethernet gateway or an external cabinet monitoring device

12108001

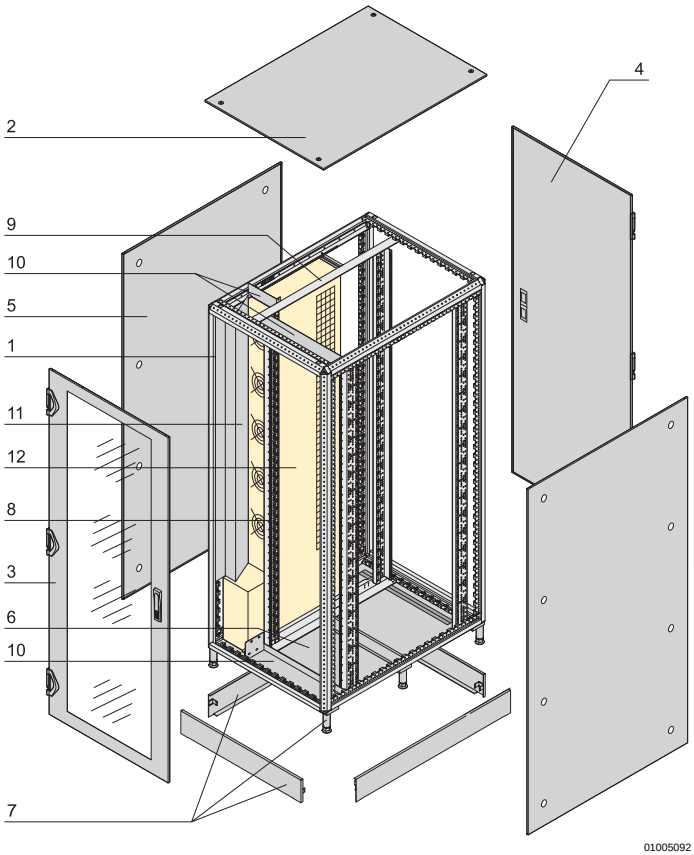
An AC switching module can switch over to an alternative mains (e.g. emergency power) in case of mains supply failure. The module detects a power failure and changes over so quickly that no break in the supply occurs for the consumer. With the AC conversion module, supply-side redundancy can be achieved for this application.

00711023

Worldwide monitoring with EMX technology

VARISTAR LHX 20, single door

01005023



01005092

- Cabinet to ingress protection class IP 55 with air/water heat exchanger up to 20 kW for voltage supply 230 V_{AC}
- Fans individually exchangeable during operation
- Droplet separator and condensate management
- Max. static load-carrying capacity 1000 kg

Delivery comprises (completely assembled and earthed)

Item	Qty	Description
1	1	Welded basic frame, Slim-Line, St profile, zinc-plated, RAL 7021, IP 55, with all-round gasket
2	1	Flat top cover, St, RAL 7021
3	1	Front door, glazed, RAL 7021, security glass, 6 mm, 180° hinge, 3 -point locking, lever handle for optional DIN profile half cylinder
4	1	Rear door, St, RAL 7021, 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
5	2	Side panel, screw fixed, St, RAL 7021
6	1	Base plate, St, RAL 7021, cable ducting at rear, water connection at front, connections can be sealed with sliding covers
7	1	Base/plinth 100 mm, with additional centre cross member, St, RAL 7021, removable covers, integrated feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 225 mm recessed at front, 740 mm distance between front and rear 19" plane
9	2	Support rail for assembly of air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	Air deflector for optimised airflow, St, RAL 7021
12	1	Air/water heat exchanger, 20 kW, 230 V_{AC}, RAL 7021; mounting to left or right, see Order information
13	1	User Manual; mains cable, length 1.5 m

Order Information

Height U	Height mm	Width mm	Depth mm	Input voltage	LHX fitting	Part no.
42	2100	800	1200	230 V_{AC}	left	10130-012
42	2100	800	1200	230 V_{AC}	right	10130-016
DIN profile half cylinder, common locking for lever handle (1 key fits all locks) incl. 2 keys						25127-995
Lifting eye for top cover PU 4 pieces						23130-072
AC mains switch-over 1 piece						23207-115

Note

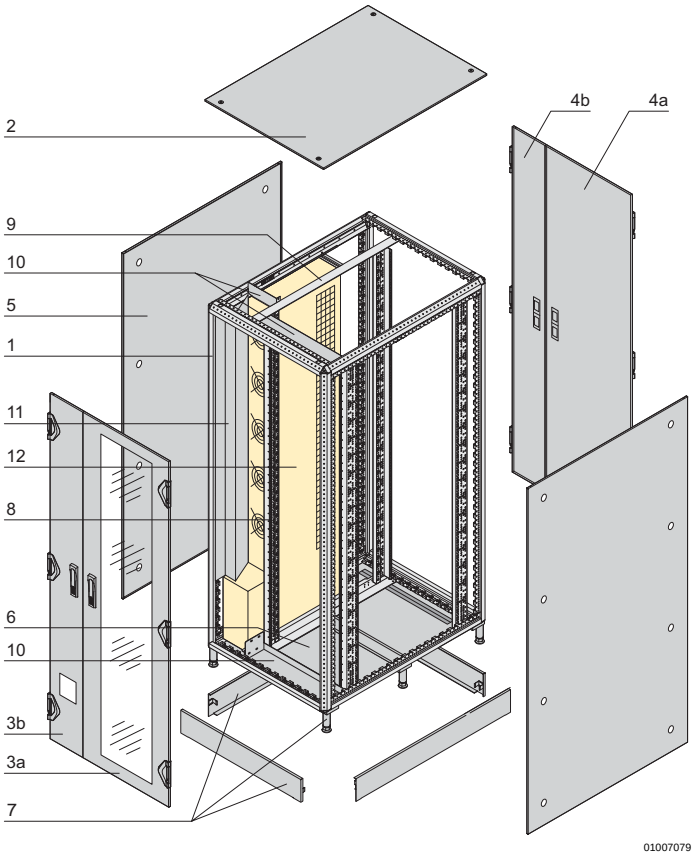
- Other dimensions and versions (e.g. 115 V_{AC} or 48 V_{DC}) available on request
- Technical data air/water heat exchanger see page 1.231
- Cabinet management to monitor LHX 20/40 temperatures, fan speed . . . see page 1.235

For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Part number in bold face type: ready for despatch within 2 working days
Part number in normal type: ready for despatch within 10 working days

VARISTAR LHX 20, double door

01006039



01007079

- Cabinet to ingress protection class IP 55 with air/water heat exchanger up to 20 kW for voltage supply 230 V_{AC}
- Separate access doors front and rear for air/water heat exchanger
- Fans individually exchangeable during operation
- Droplet separator and condensate management
- Max. static load-carrying capacity 1000 kg

Delivery comprises (completely assembled and earthed)

Item	Qty	Description
1	1	Welded basic frame, Slim-Line, St profile, zinc-plated, RAL 7021, IP 55, with all-round gasket
2	1	Flat top cover, St, RAL 7021
3a	1	Right front door, glazed, width 600 mm, RAL 7021, single pane safety glass 6 mm;
3b	1	left front door, St, 1.5 mm, width 200 mm, RAL 7021; inspection window, single pane safety glass 6 mm; doors with 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
4a	1	Rear door, St, RAL 7021, width 600 mm;
4b	1	rear door, St, RAL 7021, width 200 mm; doors with 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
5	2	Side panel, screw fixed, St, RAL 7021
6	1	Base plate, St, RAL 7021, cable ducting to rear, water connection to front, connections can be sealed with sliding covers
7	1	Base/plinth 100 mm, with additional centre cross member, St, RAL 7021, removable covers, integrated feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 225 mm recessed from front, 740 mm distance between front and rear 19" plane
9	2	Support rail for assembly of air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	Air deflector for optimised airflow, St, RAL 7021
12	1	Air/water heat exchanger 20 kW, 230 V_{AC}, RAL 7021, mounting to left or right, see Order information
13	1	User Manual; mains cable, length 1.5 m

Order Information

Height U	Height mm	Width mm	Depth mm	Input voltage	LHX fitting	Part no.
42	2100	800	1200	230 V_{AC}	left	10130-013
42	2100	800	1200	230 V_{AC}	right	10130-017
DIN profile half cylinder, common locking for lever handle (1 key fits all locks) incl. 2 keys						25127-995
Lifting eye for top cover PU 4 pieces						23130-072
AC mains switch-over 1 piece						23207-115

Note

- Other dimensions and versions (e.g. 115 V_{AC} or 48 V_{DC}) avaialable on request
- 40 kW version available on request
- Technical data air/water heat exchanger see page 1.231
- Cabinet management to monitor LHX 20/40 temperatures, fan speed . . . see page 1.235

VARISTAR LHX 20, double door, automatic door opener

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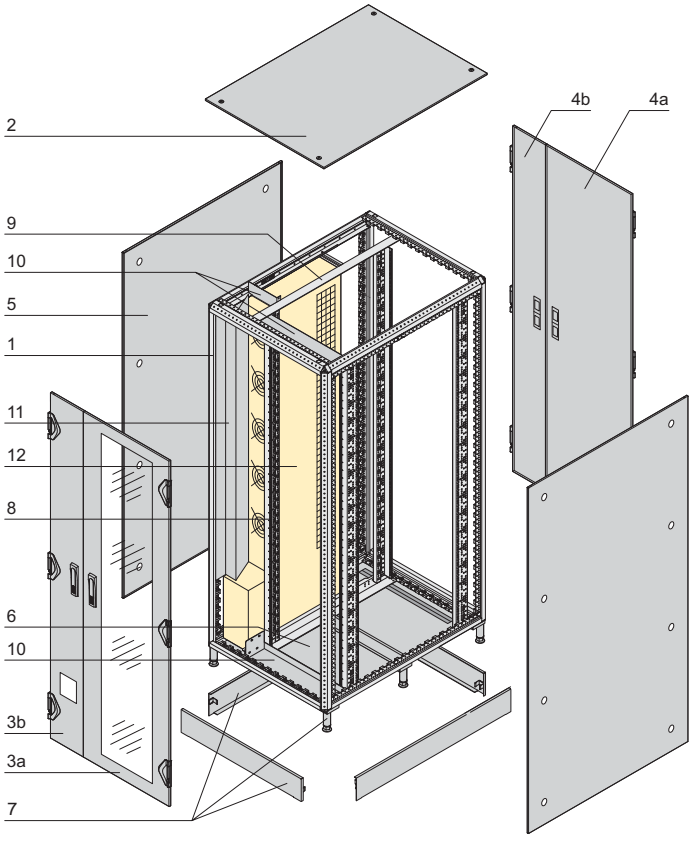


01007079

- Cabinet to ingress protection class IP 55 with air/water heat exchanger up to 20 kW for voltage supply 230 V_{AC}
- Automatic opening of the 600 mm wide front and rear door at failure of cooling unit
- Droplet separator and condensate management
- Max. static load-carrying capacity 1000 kg

Delivery comprises (completely assembled and earthed)

Item	Qty	Description
1	1	Welded basic frame, Slim-Line, St profile, zinc-plated, RAL 7021, IP 55, with all-round gasket
2	1	Flat top cover, St, RAL 7021
3a	1	Right front door, glazed, width 600 mm, RAL 7021, single pane safety glass 6 mm, automatic door opening;
3b	1	left front door, St, 1.5 mm, RAL 7021, width 200 mm; inspection window, single pane safety glass 6 mm; doors with 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
4a	1	Rear door, St, RAL 7021, width 600 mm, automatic door opening;
4b	1	rear door, St, RAL 7021, width 200 mm; doors with 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
5	2	Side panel, screw fixed, St, RAL 7021
6	1	Base plate, St, RAL 7021, cable ducting at rear, water connection at front, connections can be sealed with sliding covers
7	1	Base/plinth 100 mm, with additional centre cross member, St, RAL 7021, removable covers, integrated feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 225 mm recessed at front, 740 mm distance between front and rear 19" plane
9	2	Support rail for assembly of air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	Air deflector for optimised airflow, St, RAL 7021
12	1	Air/water heat exchanger 20 kW, 230 V_{AC}, RAL 7021, left or right-hand mounting, see order information
13	1	User Manual; mains cable, length 1.5 m

Order Information

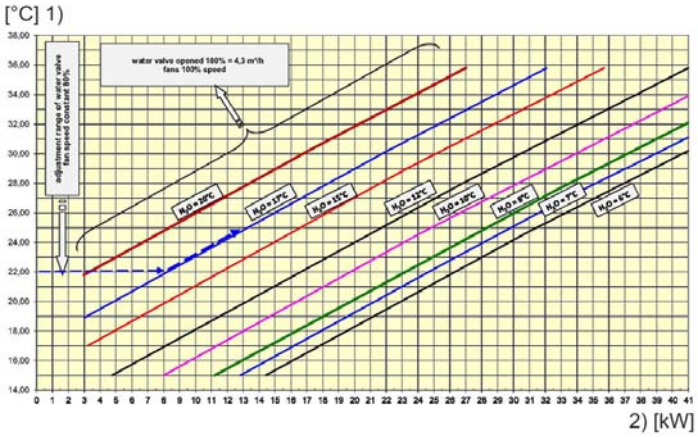
Height U	Height mm	Width mm	Depth mm	Input voltage	LHX fitting	Part no.
42	2100	800	1200	230 V_{AC}	left	10130-014
42	2100	800	1200	230 V_{AC}	right	10130-018
DIN profile half cylinder, common locking for lever handle (1 key fits all locks) incl. 2 keys						25127-995
Lifting eye for top cover PU 4 pieces						23130-072
AC mains switch-over 1 piece						23207-115

- Other dimensions and versions (e.g. 115 V_{AC} or 48 V_{DC}) available on request
- 40 kW version available on request
- Technical data air/water heat exchanger see page 1.231
- Cabinet management to monitor LHX 20/40 temperatures, fan speed . . . see page 1.235

Part number in bold face type: ready for despatch within 2 working days
Part number in normal type: ready for despatch within 10 working days

Technical data LHX 20

Diagram of cold air temperature/cooling capacity



01011052

1) Temperature of cooling air
2) Cooling capacity at various water temperatures

Technical data LHX 20

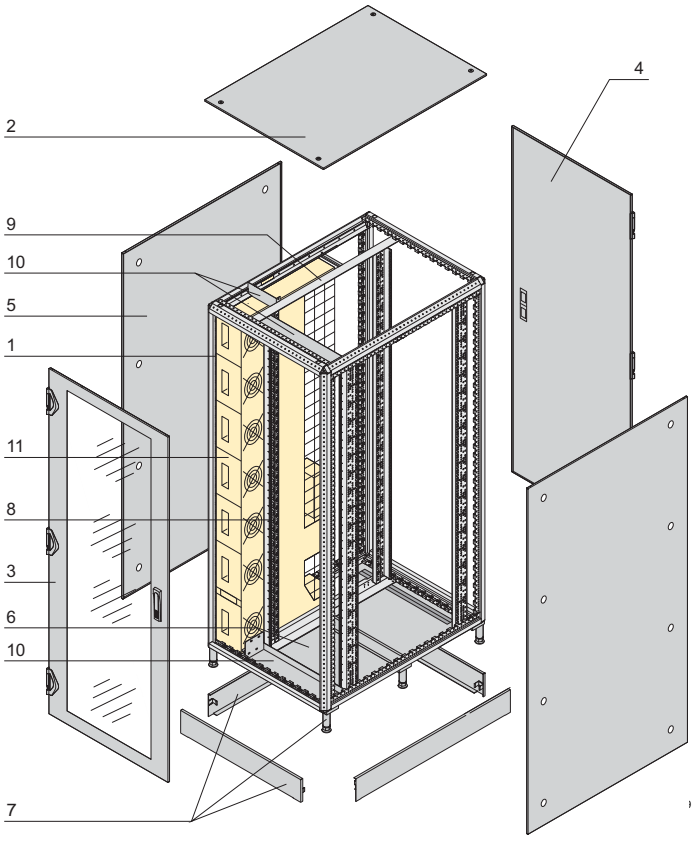
Cooling capacity	
Useable cooling capacity	**Up to 20 kW**
Adjustment range air temperature outlet	18 ... 30 °C (in 0.1 °C increments)
Max. offset	± 2 K
Water circuit	
Cooling medium *)	Water
Water inlet temperature **)	6 ... 15 °C
Water flow volume	Up to 2.8 m3/h
Pressure loss in device at 1.55 m3/h	0.5 bar
Max. permissible differential pressure	2 bar
Water conduit	Copper
Water connection inlet/outlet	Rp 1"
Condensate overflow connection	Rp 1/2"
Air loop	
Max. airflow volume, temperature-dependent control	3000 m^3/h
Air outlet LHX 20 (adjustable)	18 .... 30 °C
Electrical data AC	
Supply voltage (single phase mains)	230 V_{AC} (50/60 Hz)
Max. current consumption	4.3 A
Power consumption max load/ normal load (fan speed 80%)	920 W/530 W
Apparent power at full load	990 VA
Pre-fuse (on building side)	D10 A
Interface	
ST-bus (RJ 45)	Connection possibility for external operation and digital display
RS 232 (SUB-D 9-pin)	ASCII protocol, all operational values and status reports, such as temperature, humidity levels, fan operation times
Digital input/output (SUB-D 25-pin)	External on/off, alarm outputs and warning signals
General data	
Cabinet type of protection	IP 55
Ambient temperature during transport	–25 ... 70 °C
Ambient temperature outside of cabinet (during operation)	5 ... 70 °C
Noise level (closed cabinet) at 80 % fan speed	50.7 dB(A)
Relative humidity level	5 ... 95 %
Dimensions of heat exchanger LHX 20	Height 1849 mm, width 189.5 mm, depth 667 mm
Weight of heat exchanger LHX 20	78.5 kg (82 kg with water)
Weight of cabinet with LHX 20 approx.	340 kg

*) For smooth operation of the air/water heat exchanger it is important to adhere to the quality requirements of the water used (VDI 3803, see also user manual)

**) Standard settings

VARISTAR LHX 40

01008032



- Cabinet to protection class IP 55 with air/water heat exchanger up to 40 kW for voltage supply 230 V_{AC}
- Fans individually exchangeable during operation
- Droplet separator and condensate management
- Max. static load-carrying capacity 1000 kg

Delivery comprises (completely assembled and earthed)

Item	Qty	Description
1	1	Welded basic frame, Slim-Line, St profile, zinc-plated, RAL 7021, IP 55, with all-round gasket
2	1	Flat top cover, St, RAL 7021
3	1	Front door glazed, RAL 7021, single pane security glass, 6 mm, 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
4	1	Rear door, St, RAL 7021, 180° hinge, 3-point locking, lever handle for optional DIN profile half cylinder
5	2	Side panel, screw fixed, St, RAL 7021
6	1	Base plate, St, RAL 7021, cable ducting at rear, water connection at front, connections can be sealed with sliding covers
7	1	Base/plinth 100 mm, with additional centre cross member, St, RAL 7021, removable covers, integrated feet
8	4	19" panel/slide mount with EIA cut-outs, St, RAL 7021, 225 mm recessed at front, 740 mm distance between front and rear 19" plane
9	2	Support rail for assembly of air/water heat exchanger and 19" panel/slide mounts, St, RAL 7021
10	4	Air baffle, St, RAL 7021
11	1	Air/water heat exchanger, 40 kW, 230 V_{AC}, RAL 7021; mounting to left or right, see Order information
12	1	User Manual; mains cable, length 1.5 m

Order Information

Height U	Height mm	Width mm	Depth mm	Input voltage	LHX fitting	Part no.
42	2100	800	1200	230 V_{AC}	left	10130-199
42	2100	800	1200	230 V_{AC}	right	10130-200
DIN profile half cylinder, common locking for lever handle (1 key fits all locks) incl. 2 keys						25127-995
Lifting eye for top cover PU 4 pieces						23130-072

Note

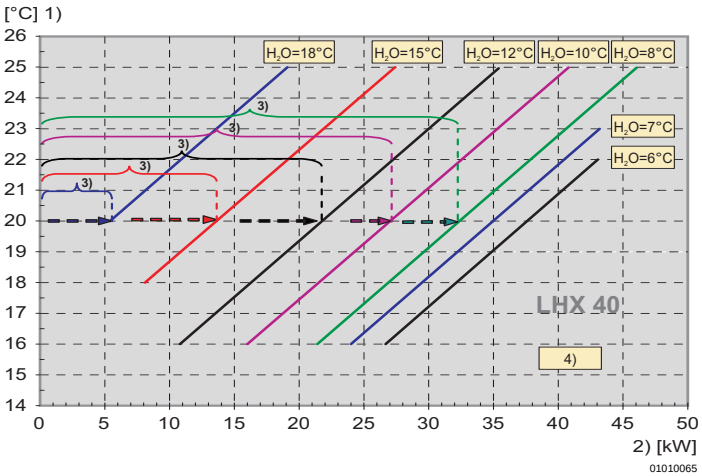
- Other dimensions and versions (e.g. 115 V_{AC} or 48 V_{DC}) available on request
- Ethernet gateway possible on request
- Technical data air/water heat exchanger see page 1.233
- Cabinet management to monitor LHX 20/40 temperatures, fan speed . . . see page 1.235

For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Part number in bold face type: ready for despatch within 2 working days
Part number in normal type: ready for despatch within 10 working days

Technical data LHX 40

Diagram of cold air temperature/cooling capacity



1) Temperature of cooling air
2) Cooling capacity at various water temperatures
3) Adjustment range of water flow valve
(fan speed constant at 80 %)
4) Max. water flow rate 4.3 m^3/h

Technical data

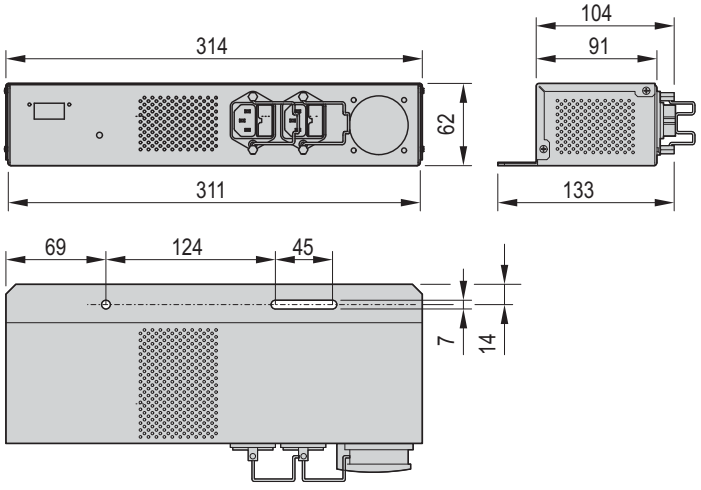
Cooling capacity	
Useable cooling capacity	**Up to 40 kW**
Adjustment range air temperature outlet	18 ... 30 °C (in 0.1 °C increments)
Max. offset	± 2 K
Water circuit	
Cooling medium *)	Water
Water inlet temperature **)	6 ... 15 °C
Water flow volume	Up to 4.3 m3/h
Pressure loss in device at	3.0 m^3/h, max. 0.6 bar (4.3 m^3/h, max. 1.5 bar)
Max. permissible differential pressure	2 bar
Water conduit	Copper
Water connection inlet/outlet	Rp 1"
Condensate overflow connection	Rp 1/2"
Air loop	
Max. airflow volume, temperature-dependent control	4500 m^3/h
Air outlet LHX 40 (adjustable)	18 .... 30 °C
Electrical data AC	
Supply voltage (single phase mains)	230 V_{AC} (50/60 Hz)
Max. current consumption	7 A
Power consumption max load/ normal load (fan speed 80%)	1200 W / 835 W
Apparent power at full load	1610 VA
Pre-fuse (on building side)	D 10 A
Interface	
ST-bus (RJ 45)	Connection possibility for external operation and digital display
RS 232 (SUB-D 9-pin)	ASCII protocol, all operational values and status reports, such as temperature, humidity levels, fan operation times
Digital input/output (SUB-D 25-pin)	External on/off, alarm outputs and warning signals
General data	
Cabinet type of protection	IP 55
Ambient temperature during transport/ outside cabinet (during operation)	-25 ... 70 °C/5 ... 70 °C
Relative humidity level	5 ... 95 %
Noise level (closed cabinet) at 80 %/100 % fan speed	58 dB(A)/61 dB(A)
Dimensions of heat exchanger LHX 40	Height 1849 mm, width 189.5 mm, depth 955 mm
Weight of heat exchanger LHX 40	102 kg (110 kg with water)
Weight of cabinet with LHX 40 approx.	370 kg

*) For smooth operation of the air/water heat exchanger it is important to adhere to the quality requirements of the water used; the necessary corrosion and/or frost protection is dependent on the location and on the external chiller (VDI 3803, see also user manual).

**) At a water inlet temperature below 6 °C and above 15 °C the control accuracy can no longer be guaranteed. There is also a risk of condensation if the water temperature falls short of the given limits.

AC mains changeover switch

12108001



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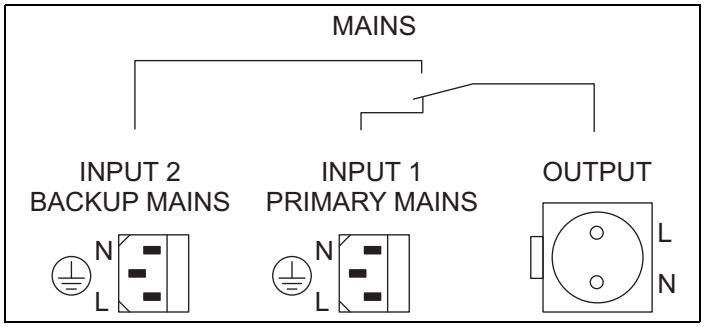
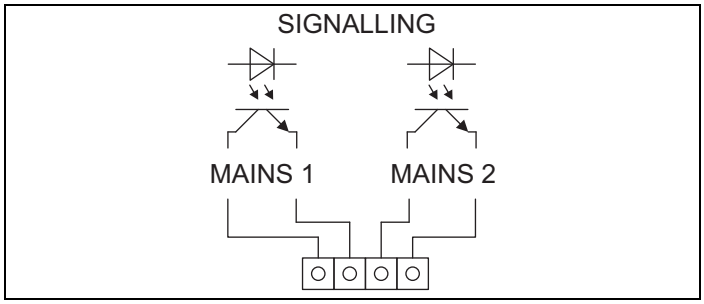


01608052

Block diagram



01608051

Signalling

- AC mains changeover switch for secure (redundant) supply with 2 supply voltages
- Automatic switching between two AC mains supplies (normal mains, emergency mains)
- Input 2 x 100 … 240 V_{AC}
- At failure of one mains, switching to the other mains within 20 ms, so that a consumer (e.g. air conditioning) will be supplied uninterruptedly
- Signalling: Mains 1/Mains 2 existent
- Designed to mount in the cabinet, fixing on upright
- Passend für Luft/Wasser-Wärmetauscher LHX 20

Delivery comprises

Item	Qty	Description
1	1	AC mains changeover switch, mains input 1 and 2: 2 x IEC plug mains outlet: 1 x SCHUKO socket
2	1	User manual

Order Information

Description	Part no.
AC mains changeover switch for LHX 20	23207-115
Equipment cable SCHUKO/UTE SCHUKO/UTE plug, IEC 320 C13 female socket, 2.5 m, 1 piece	60103-131
Equipment cable, BS British Standard plug, IEC 60320 C13 socket, 2.5 m, 1 piece	60103-137
Equipment cable, USA USA plug, IEC 320 socket, 2 m, 1 piece	60103-141
Mains cable, IEC IEC 60320 C14 plug, IEC 60320 C13 female socket, 2.5 m, 1 piece	60197-053

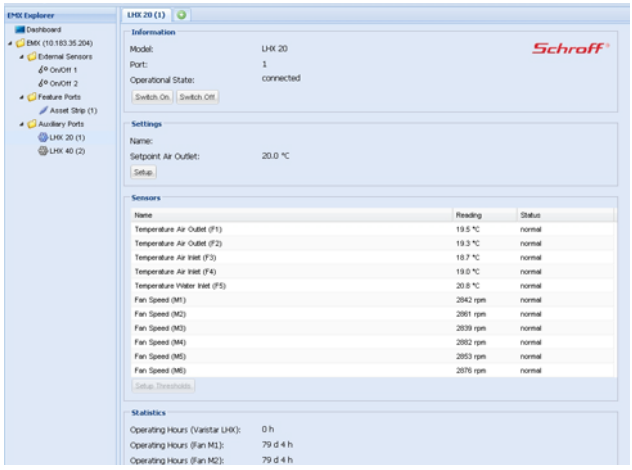
Dimensions

Mains voltage input/output	100 ... 240 V_{AC}
Mains current	Max. 8 A
Switchover time at failure in mains 1	< 20 ms
Signalling mains 1/mains 2	Galvanically separated via optocoupler
Dimensions	Height 333 mm, width 62 mm, depth 120 mm

For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Part number in bold face type: ready for despatch within 2 working days
Part number in normal type: ready for despatch within 10 working days

Management for LHX/SHX



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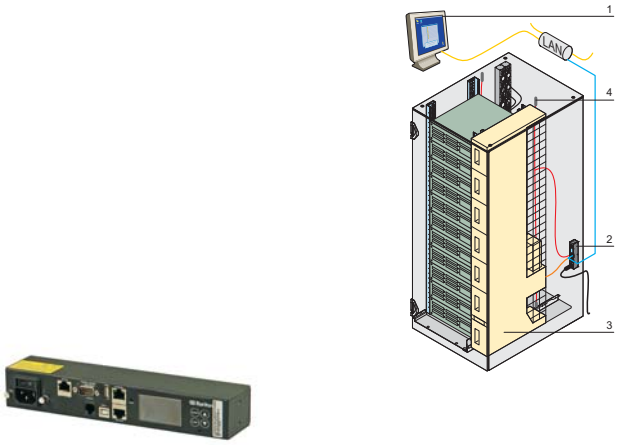
Browser display



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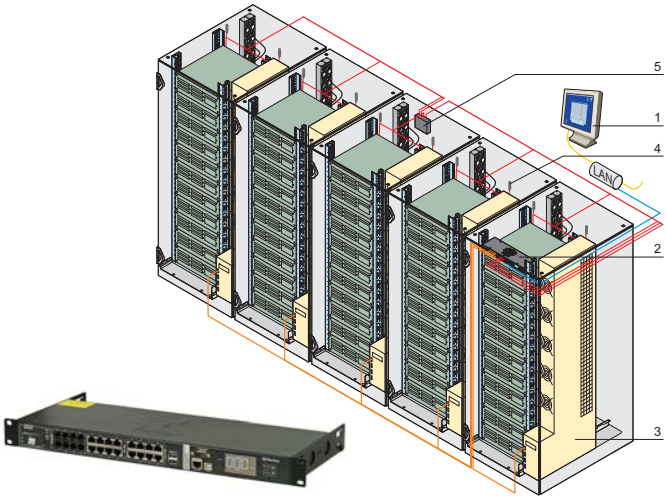
EMX -111



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EMX -888

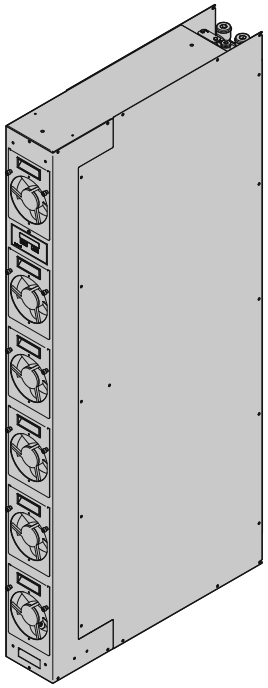
Item	Description
1	Real-time monitoring of web graphical user interface (GUI)
2	EMX
3	LHX 20/40
4	Telemonitored temperature and humidity sensors
5	Cabinet management base unit

- Connection of cabinet management basic unit with RJ 45 interface
- Automatic detection of the connected LHX 20/40 air/water heat exchangers
- Monitored parameters:
  - Inlet temperature of servers (parameter can be set via web interface
  - Air temperature front (2 parameters)
  - Air temperature rear (2 parameters)
  - Fan speed (6 parameters for LHX 20, 7 parameters for LHX 40)
  - Water inflow temperature (1 parameter)

Note

- For cabinet management base unit see page 3.46
- Sensors (temperature, humidity, differential pressure, airflow...) and hub for connecting multiple sensors see from page 3.47

SHX 30 air/water heat exchanger



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- Air/water heat exchanger with 30 kW cooling capacity
- Water connection at bottom or bottom/top (with condensate pump)
- 1 PSU or 2 PSUs (redundant)
- Fans may be exchanged individually during operation
- Drop collector and condensate management

NEW

Delivery includes

Item	Qty	Description
1	1	SHX 30 air/water heat exchanger, RAL 7021, 100 ... 240 V_{AC}
2	1	Mains cable, 1.5 m
3	1	Connecting cable for management unit
4		User manual (for online download)

Order Information

SHX 30 air/water heat exchanger, 30 kW		Part No.
Water connection at bottom	1 PSU	60714-067
	2 PSUs, redundant power supply	60714-068
Water connection at top and bottom (with condensate pump)	1 PSU	60714-077
	2 PSUs, redundant power supply	60714-078
Accessories		
Cabinet management basic units Height 44 mm, width 251 mm, depth 53 mm, for monitoring one air/water heat exchanger, max. 16 sensor values, 1 piece		EMX111
Cabinet management basic units Height 44 mm, width 440 mm, depth 134 mm, for monitoring up to max. 8 air/water heat exchangers, max 128 sensor values, 1 piece		EMX888
Capteur de température à raccorder directement au SHX 30, longueur du câble 2 m, 1 pièce		60130-724

01013020

Rear connections at bottom

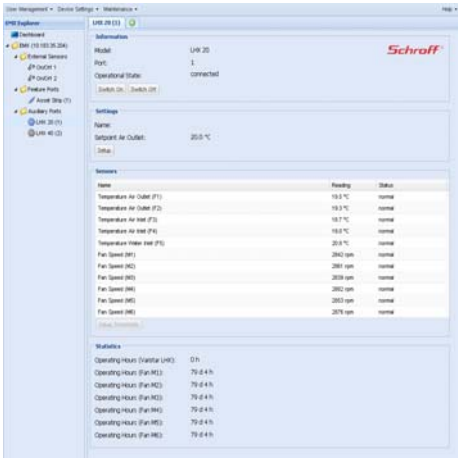
01013021

Rear connections at top

Note

Please order optional management unit separately

- Cabinet management base unit connects via RJ 45 interface
- Web interface
  - Automatic detection of connected Varistar SHX 30 air/water heat exchanger
  - Inlet temperature of servers (parameter can be set via web interface)
  - Switch on/off of cooler
  - Adjustment of set temperature and fan speed
  - Air temperature monitoring at front/rear, fan speed and water inlet temperature
  - Temperature monitoring/control using an external temperature sensor (please order separately)



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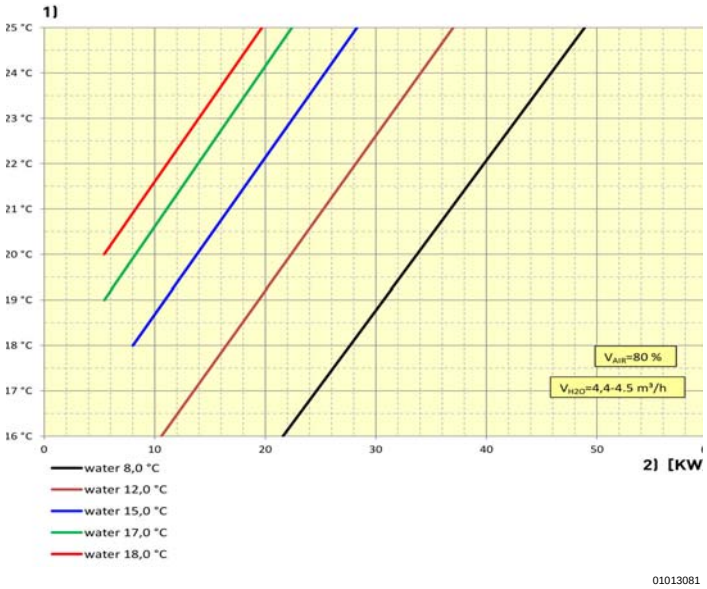
Management browser representation

SHX 30 air/water heat exchanger

Graph: cold air temperature against cooling capacity



1) Cold air temperature
2) Cooling capacity at different cold water temperatures
Fan speed 100 %
Maximum water flow rate 4.5 m^3/h

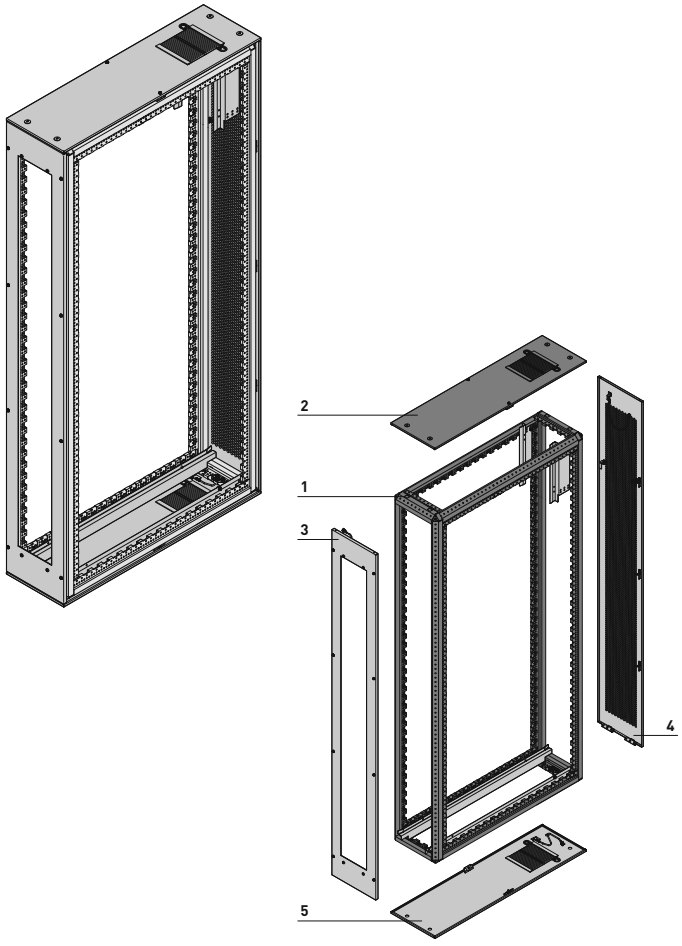
Technical data

Cooling capacity	
Useful cooling capacity	30 kW
Controlled temperature	18 ... 50 °C (adjustable in 0.1 °C steps)
Max. offset emergency cooling adjustable between 0 and 8 K from set value	4 (factory-preset)
Water circuit	
Cooling medium *)	Water, water-glycol mix (max. 33%)
Water inlet temperature **)	6 ... 18 °C
Water flow volume	up to 4.5 m^3/h
Pressure loss in device at	3.0 m^3/h, max. 1.3 bar; 4.5 m^3/h, max. 3.1 bar
Water conduit	Copper
Water connection inlet/outlet	Rp 1"
Condensate drain connection	Rp $^1/_2$"
Air circuit	
Max. airflow volume, temperature-dependent control	5000 m^3/h
Electrical data AC	
Supply voltage (single phase)	100 ... 240 V_{AC} (50 / 60 Hz)
Max. current consumption	6 A / 12 A (230 V / 115 V)
Max. power consumption (fan speed 100%) / Normal operation (fan speed 80%)	1100 W / 750 W
Pre-fuse (fitted by customer)	D 10 A / D 16 A (230 V / 115 V)
Interface	
RS 485 Modbus interface	Connection option for external monitoring system
RS 232 (sub-D 9-pin)	Serial access
Input, central terminal box with 10 potential-free contacts	External temperature sensor connection point
General data	
Ambient temperature: Transport, storage when fully emptied / when containing 35% glycol / in operation outside cabinet	-25 ... 70 °C / 5 ... 70 °C
Relative humidity for transport and storage (non-condensing)	5 ... 95%
Heat exchanger dimensions	Height 1849 mm, width 189.5 mm, depth 850 mm
Heat exchanger weight	110 kg
Weight of cabinet with cooling module approx.	370 kg

*) To ensure problem-free operation of the air/water heat exchanger the quality requirements of the water must be maintained; the appropriate anti-corrosion and frost protection agents are dependent on the environment in which the unit is used and on the external chiller (VDI 3803, see also user manual).

**) At water inlet temperatures of < 6 °C and > 15 °C, the control accuracy can no longer be guaranteed. There is also a risk of condensation if the water temperature falls short of the given limits.

Rack for SHX 30 air/water heat exchanger



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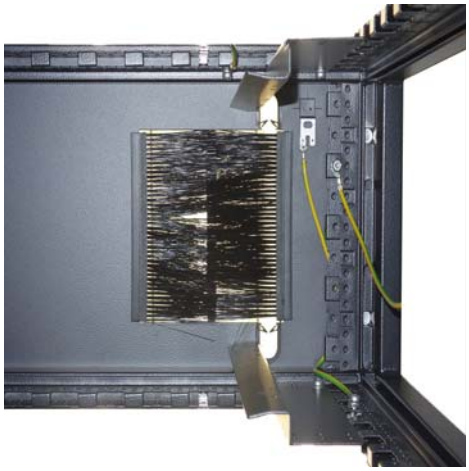

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Water enters via brush strips; lateral cable ducting for power/data cables

- Rack (VARISTAR Slim-Line) to accommodate a SHX 30 air/water heat exchanger
- Height 2000 or 2200 mm
- Depth 1000 or 1200 mm
- Width 300 mm
- Covers top, bottom, front and rear

NEW

Delivery includes

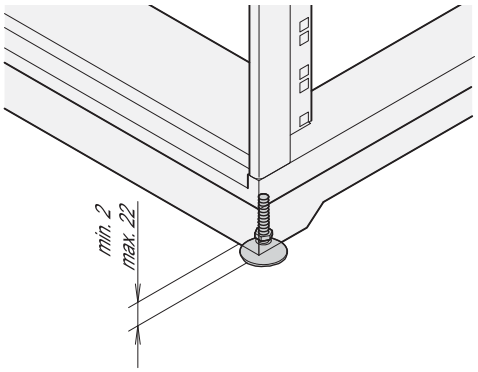
Item	Qty	Description
1	1	Welded basic rack (Slim-Line) from steel profiles, RAL 7021; earthing stud
2	1	Flat top cover, St, RAL 7021; with brush strip cut-out (for water) and on the side for cable ducting
3	1	Front frame, St, RAL 7021
4	1	Rear cover, perforated, lockable
5	1	Base plate, St, RAL 7021; with brush strip cut-out (for water) and on the side for cable ducting

Order Information

Height mm	Width mm	Depth mm	Part no.
2000	300	1000	10130-226
2000	300	1200	10130-227
2200	300	1000	10130-228
2200	300	1200	10130-229
Accessories			
Adjustable feet for the frame, RAL 7021, static load-carrying capacity 1000 kg, PU 4 pieces			23130-511
Gasketing for adjustable feet Polyurethane foam gasketing, color similar to RAL 7021, length 300 mm, for sealing front and rear, PU 2 pieces			23130-538
Base/plinth Base plinth, St, width 300 mm, height 100 mm; bolts on to rack, PU 2 pieces			23130-507
Side trim St, 1.5 mm, height 100 mm, depth 1000 mm, PU 2 pieces			23130-172
Side trim St, 1.5 mm, height 100 mm, depth 1200 mm, PU 2 pieces			23130-363
Side panel, screw-fixed for IP 55 St, 1 mm, height 2000 mm, depth 1000 mm, 2 pieces			21130-013
Side panel, screw-fixed for IP 55 St, 1 mm, height 2000 mm, depth 1200 mm, 2 pieces			21130-535
Side panel, screw-fixed for IP 55 St, 1 mm, height 2200 mm, depth 1200 mm, 2 pieces			21130-018
Side panel, screw-fixed for IP 55 St, 1 mm, height 2200 mm, depth 1200 mm, 2 pieces			21130-537
Separating wall St, 1 mm, AlZn, height 2000 mm, for depth 1000 mm, 1 piece			23130-480
Separating wall St, 1 mm, AlZn, height 2000 mm, for depth 1200 mm, 1 piece			23130-481
Separating wall St, 1 mm, AlZn, height 2200 mm, for depth 1000 mm, 1 piece			23130-484
Separating wall St, 1 mm, AlZn, height 2200 mm, for depth 1200 mm, 1 piece			23130-485

Part number in bold face type: ready for shipping within 2 working days
Part number in normal type: ready for shipping within 10 working days

Adjustable feet



MRA44483

- Adjustable feet for direct mounting onto frame
- Static load-carrying capacity 1000 kg

NEW

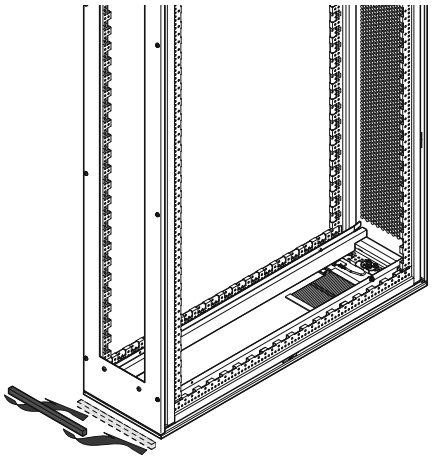
Delivery includes

Item	Qty	Description
1	4	Adjustable feet, St, polyamide, black
2	1	Fixing materials kit

Order Information

Description	Part no.
Adjustable feet	23130-511
Accessories	
Gasketing for adjustable feet Polyurethane foam gasketing, color similar to RAL 7021, length 300 mm, for sealing front and rear, PU 2 pieces	23130-538

Gasketing for adjustable feet



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- For horizontal sealing at bottom in containments (front and rear) where adjustable feet are used

NEW

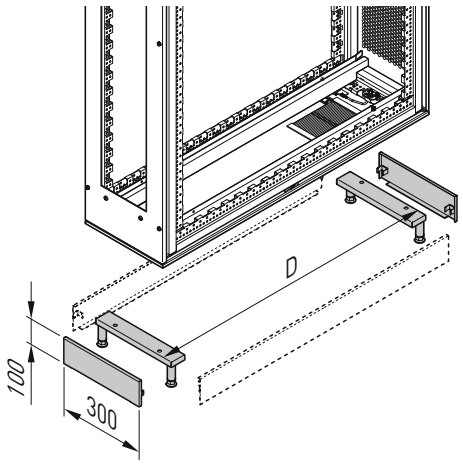
Delivery includes

Item	Qty	Description
1	2	Gasketing, flexible polyurethane, length 300 mm, color similar to RAL 7021, conforms to UL 94-HF1

Order Information

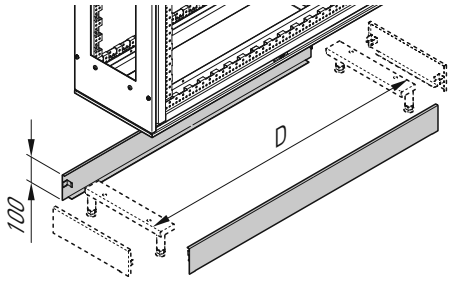
Description	Part no.
Gasketing for adjustable feet	23130-538

Base/plinth



01013071

Base/plinth



01013072

Accessories: Side covers

- Base for 300 mm wide frame (air/water heat exchanger)
- Base is bolted to the frame at front and rear; please order side trims separately

NEW

Delivery includes

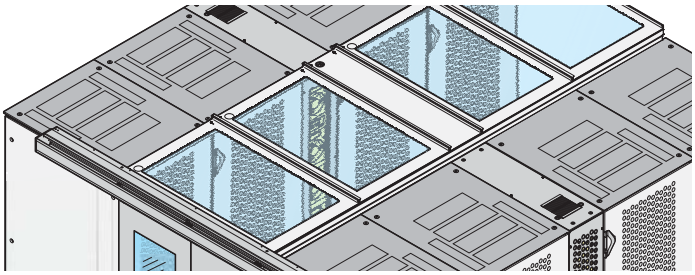
Item	Qty	Description
1	2	Base, St, 1.5 mm; with built-in feet, width 300 mm, color RAL 7021
2	1	Fixing materials kit

Order Information

Height mm	Width mm	Part no.
100	300	23130-507
Accessories		
Side trim RAL 7021, St, 1.5 mm, height 100 mm, depth 1000 mm, PU 2 pieces		23130-172
Side trim RAL 7021, St, 1.5 mm, height 100 mm, depth 1200 mm, PU 2 pieces		23130-363

Part number in bold face type: ready for shipping within 2 working days
Part number in normal type: ready for shipping within 10 working days

Top cover element for aisle containment (SHX 30 air/water heat exchanger)



Width 300 mm

- Suitable for an aisle width of 1200 mm
- Width 300 mm (when fitting directly beside the "Sliding door, mechanical" a 200 mm width must be used)
- Top cover can be removed from inside (allows access to lighting and facilitates maintenance works)
- The universal top cover profile enables the aisle height to be raised by 84 mm and cabinets with other heights can also be integrated. Please order separately

NEW

Delivery includes

Item	Qty	Description
1	1	Top cover, St, 2 mm, RAL 7021, plate length 1200 mm
2	1	Fixing materials kit

Order Information

Width mm	Description	Part no.
300	For cabinet width 300 mm (aisle width 1200 mm)	21130-648
Accessories		
Raised top cover Al extrusion, RAL 7021, length 2400 mm, height 84 mm, PU 2 pieces; raises top cover elements by 84 mm and allows integration of cabinets with other heights		21130-594
Assembly kit Mounting of top cover raising profile, PU 6 pieces		23130-433

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